Public Health England

Evaluation of new antigens for subunit vaccines against *Mycobacterium tuberculosis*.

PHE Porton Down
University of Oxford / Jenner Institute
University of Southampton

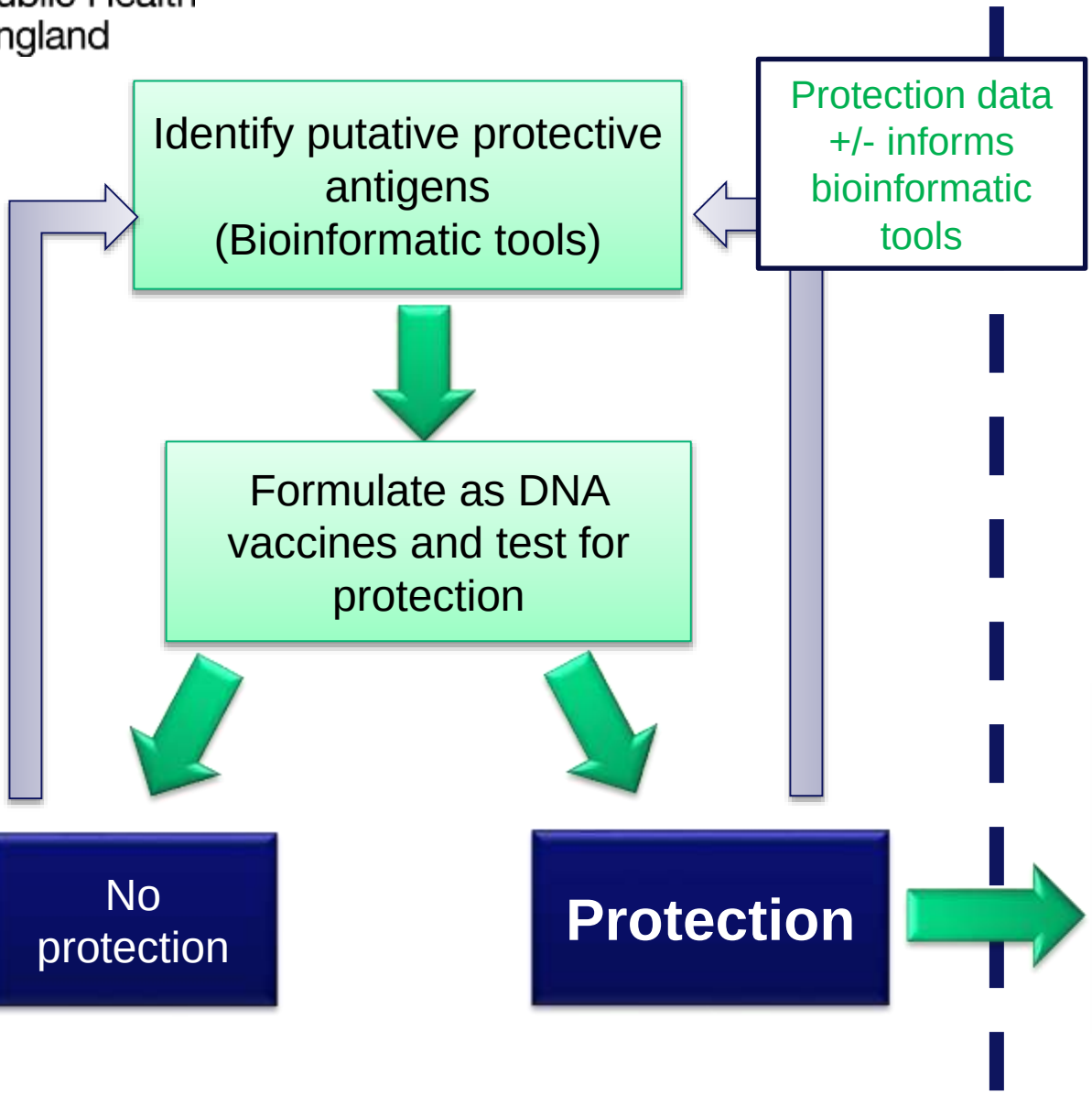
13 February 2015

Project Concept

Public Health England

UNIVERSITY OF OXFORD

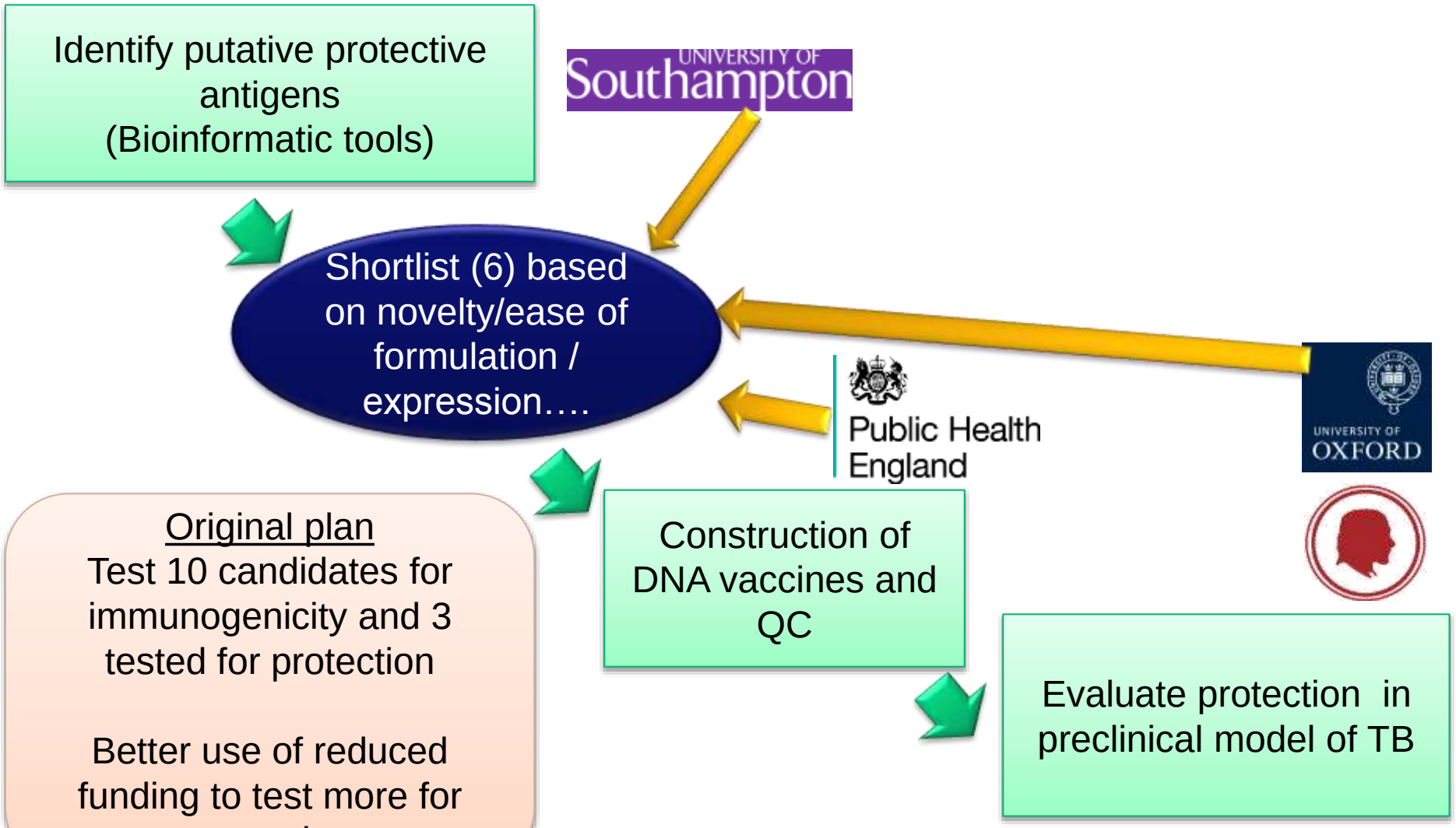
UNIVERSITY OF Southampton



Beyond CiC award

- IP protect
- Follow on funding
- Improve formulation e.g. viral vector, combinations of antigens
- Product development input e.g. TBVI
- Advanced testing

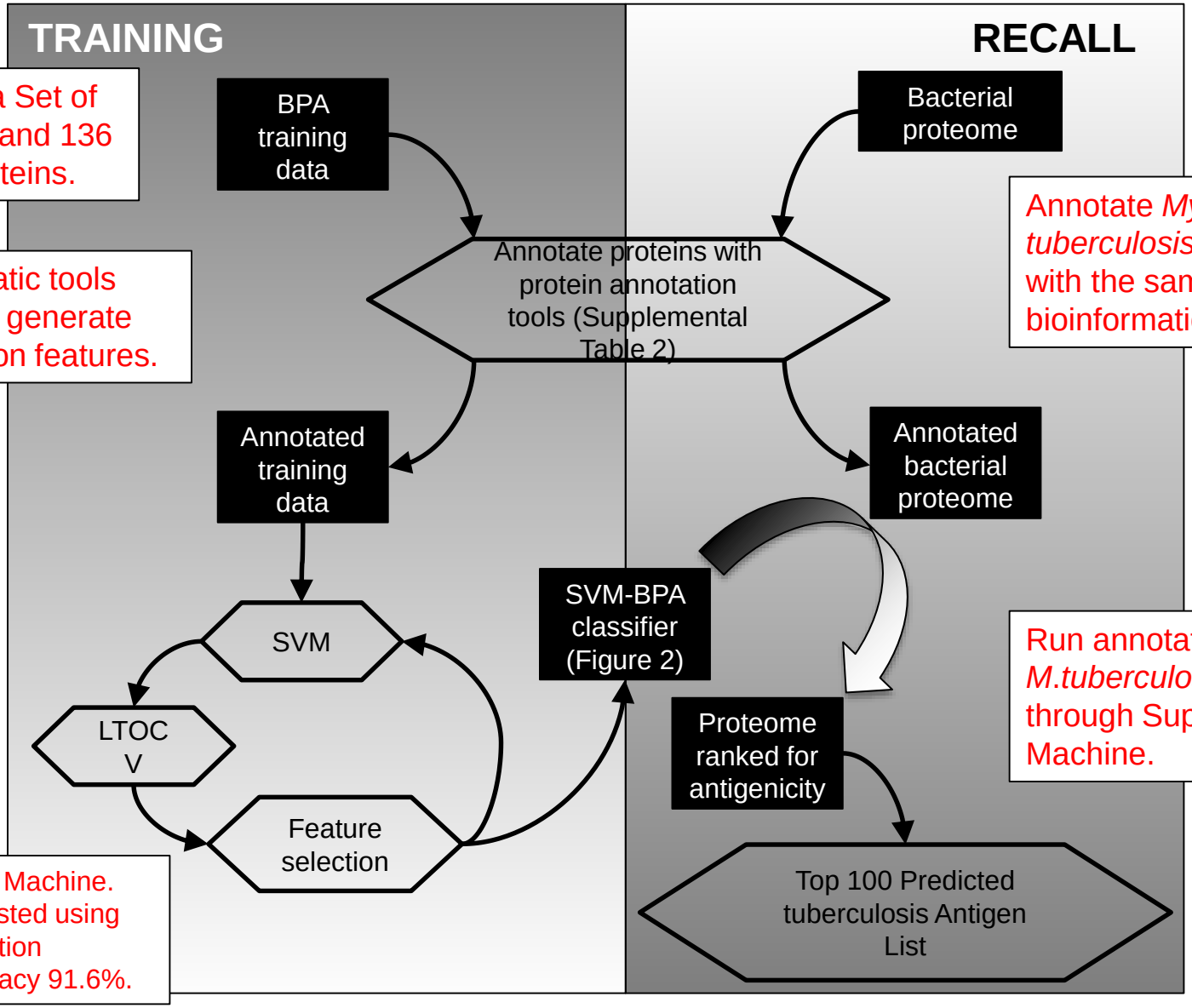
Project Outline



Training Data Set of 136 Positive and 136 Negative Proteins.

19 bioinformatic tools were used to generate 122 annotation features.

Support Vector Machine. Trained and Tested using the 122 annotation features. Accuracy 91.6%.



Annotate *Mycobacterium tuberculosis* proteome with the same 19 bioinformatic tools.

Run annotated *M.tuberculosis* genome through Support Vector Machine.

Bowman BN, McAdam PR, Vivona S, Zhang JX, Luong T, Belew RK, et al.; Improving reverse vaccinology with a machine learning approach. *Vaccine* 2011;**29**(45):8156-64

pVAX plasmid DNA constuction

Public Health England

M. tb genomic DNA

PCR

Gateway® Cloning

BP

LR

Endo free Qiagen prep

Analytical restriction digest

Sequence analysis

In vitro expression (BHK-21)

→ Efficacy study

Project Outline

Identify putative protective antigens (Bioinformatic tools)

University of Southampton

Shortlist (6) based on novelty/ease of formulation / expression….

Current status

Public Health England

University of Oxford

Construction of DNA vaccines and QC

Evaluate protection in preclinical model of TB